TFW 2872

PATENT APPLICATION
Docket No: 14321.65

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of	Kazuhide Nakajima et al.	)
Serial No.:	10/523,460	) Art Unit 2872
Filing Date:	February 6, 2005	)
Confirmation No.:	5805	)
For:	SINGLE MODE OPTICAL FIBER WITH ELECTRON VACANCIES	)

CERTIFICATE OF DEPOSIT UNDER 37 C.F.R. § 1.8

I hereby certify that the following documents are being deposited with the United States Postal Service as First Class Mail, postage prepaid, in an envelope addressed to: Commissioner for Patents, PO Box 1450, Alexandria, Virginia 22313-1450, on the 9th day of November 2005.

- Transmittal for Information Disclosure Statement (3 pages)
- Information Disclosure Statement (3 pages)
- Form PTO-1449 listing 15 references (2 pages)
- A copy of each of the references listed on the Form PTO-1449
- Postcard

Respectfully submitted,

DANA L. TANGREN
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Telephone No. 801.533.9800

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TRANSMITTAL FOR INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Transmitted herewith for filing and pursuant to 37 C.F.R. § 1.97 is an Information Disclosure Statement, which includes the following statements, if any, required variously by 37 C.F.R. § 1.98:

_X_ Statement of relevance of selected cited references not in the English language which are not translated.

___ Statement that selected cited references are substantially cumulative of an enclosed or previously submitted reference.

___ Statement that selected cited references were previously cited by or submitted to the United States Patent and Trademark Office in a prior application which is relied upon for an earlier filing date under 35 U.S.C. § 120.

* Admitted only in California
§ Admitted only in Virginia

A. Additional Materials Required Due to Content of Information Disclosure Statement

Transmitted are the following documents in addition to the Information Disclosure Statement as required variously under 37 C.F.R. § 1.98:

X Form PTO-1449 listing 15 reference submitted for consideration.

X A copy of each of the references listed on the Form PTO-1449.

___ English translations of ___ (___) of the references listed on the Form PTO-1449 which are not in the English language.

___ Copies of the following documents from the prosecution of a previous, related application:

___ Form PTO-1449 AND INFORMATION DISCLOSURE STATEMENT; and

___ Form PTO-892

B. Additional Materials Required Due to Timing of Filing of Information Disclosure Statement

The transmitted Information Disclosure Statement is being filed within one (1) of the following four (4) time periods:

I. X Prior to the later of either three (3) months following the filing date or the mailing of a first Office Action. Accordingly, no materials other than those listed above are enclosed.

II. ___ Following the latter of either three (3) months following the filing date or the mailing of a first Office Action, but before the mailing of a final Office Action or a Notice of Allowance. Accordingly, to secure consideration thereof, one (1) of the following is also enclosed:

___ Promptness Certification; or

___ Check No. _____ in the amount of ___ constituting the submission fee set forth in 37 C.F.R. § 1.17(p).

III. ___ After the mailing of a Notice of Allowance, but before payment of the Issue Fee. Accordingly, in order to secure consideration thereof, each of the following are also enclosed:

___ Promptness Certificate;

___ Petition for Consideration; and

___ Check No. in the amount of ___ constituting the petition fee set forth in 37 C.F.R. § 1.17(i)(1).

IV. ___ After payment of the Issue Fee. Accordingly, in order to secure consideration thereof, each of the following are also enclosed:

___ Petition to Withdraw from Issue; and

___ Check No. ___ in the amount of ___ constituting the petition fee set forth in 37 C.F.R. § 1.17(i)(1).

C. Fees

The Commissioner is hereby authorized to charge payment of or any deficiency in the following fees associated with this communication, or to credit any overpayment thereof, to Deposit Account No. 23-3178. A duplicate copy of this letter is enclosed.

_X_ Any fee required in relation to filing of this letter or any documents transmitted therewith.

___ The submission fee set forth in 37 C.F.R. § 1.17(p) in the event that 37 C.F.R. § 1.97(c) applies and the Examiner is not satisfied that any Promptness Certificate submitted meets the requirements of 37 C.F.R. § 1.97(e).

___ The submission fee set forth in 37 C.F.R. § 1.17(p).

___ The petition fee set forth in 37 C.F.R. § 1.17(i)(1).

Dated this 9th day of November 2005.

Respectfully submitted,

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Enclosures
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INFORMATION DISCLOSURE STATEMENT
UNDER 37 C.F.R. § 1.97

Commissioner for Patents
PO Box 1450
Alexandria, Virginia 22313-1450

Sir:

Please find, pursuant to 37 C.F.R. § 1.98(a)(1), the enclosed Form PTO-1449 which contains a list of all patents, publications, or other items that have come to the attention of one or more of the individuals designated in 37 C.F.R. § 1.56(c). While no representation is made that these references may be "prior art" within the meaning of that term under 35 U.S.C. §§ 102 or 103, the enclosed listed references are disclosed so as to fully comply with the duty of disclosure set forth in 37 C.F.R. § 1.56.

Moreover, while no representation is made that a specific search of office files or patent office records has been conducted or that no better art exists, the undersigned attorney of record believes that the enclosed art is the closest to the claimed invention (taken in its entirety) of which the undersigned is presently aware, and no art which is closer to the claimed invention (taken in its entirety) has been knowingly withheld.

In accordance with 37 C.F.R. §§ 1.97 and 1.98, a copy of each of the listed references or relevant portion thereof that is not a US patent document is also enclosed.

Statement of Relevance of References Listed
Unaccompanied by English Translation
Under 37 CFR § 1.98(a)(3)

In accordance with 37 CFR § 1.98(a)(3), the following concise explanation of the relevance of each listed reference that is not in the English language and unaccompanied by a translation into English is provided.

Japanese Patent No. 09-274118: PROBLEM TO BE SOLVED: To widen the effective area of operating wavelength windows respectively near 1300nm and 1550nm. SOLUTION: This fiber consists of a core region which has a center line and radius along the longitudinal axis of the fiber and a refractive index reflection distribution and max. refractive index and a clad layer which encloses this core region and has the refractive index reflection distribution and max. refractive index nC. In such a case, at least part of the refractive index distribution of the core region has the refractive index larger than nC. The core region is characterized by the max. refractive index which is apart from the center line, the min. point of the refractive index distribution which exists near the center line and the central line which is the symmetrical axis of the refractive index distribution.

Japanese Patent No. 11-218632: PROBLEM TO BE SOLVED: To provide a dispersion shift fiber (DSF) which is suitable for light- wavelength division multiplex transmission. SOLUTION: A refractive index distribution and a core diameter ratio are found so as to obtain an optimum mode filed diameter and an optimum dispersion gradient. In concrete, nonlinearlity and a low dispersion gradient are both obtained by setting the specific refractive index difference (Δ 1) to the refractive index of pure silica of a center core 1 to +0.7 to +0.85%, a refractive index distribution parameter (a constant) to 1.2 to 1.8, the specific refractive index difference of a 1st side core 2 to -0.05 to +0.1%, the specific refractive index difference (Δ 3) to +0.3 to +0.6%, the radius (a 1/2) of the 1st side core 2 to 2 to 4.5 μm, and the radius (a2 /2) of the 1st side core 2 to 7 to 12.5 μm and the radius (a3 /2) of the 2nd core 3 to 7-12.5 μm. Judging from that the nonlinearlity can be obtained, waveform distortion of signal light can be controlled for fast, large-capacity transmission and judging from the small dispersion gradient, a wide wavelength range can be used for the signal light.

Japanese Patent No. 2000-356719: PROBLEM TO BE SOLVED: To provide a device which exhibits a relatively large nonlinear interaction at visible and near IR (vis-nir) wavelengths. SOLUTION: A suitably designed optical waveguide exhibits an abnormal (positive) dispersion over the continuous body of the vis-nir wavelength and the fiber 10 exhibits zero dispersion at a visible wavelength (for example, about 760 nm). These characteristics are achieved by mutually matching a core region 12 and the refractive index difference between the core region 12 and a clad 14 (making the core region 12 relatively small and making the refractive index difference relatively large). In a more preferable embodiment, the zero dispersion point occurs at the vis-nir wavelength. For example, the optical waveguide is fine structure fiber 10 having the silica core 12 enclosed by the relative thin inner clad 14 having plural capillary holes 14 and 1 enabling the refractive index waveguide in the core 12. The patterns of the cross sections of the holes are for example, hexagonal or triangular.

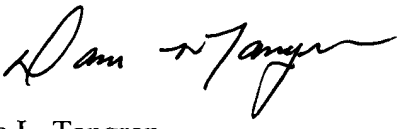
Japanese Patent No. 2001-033647: PROBLEM TO BE SOLVED: To provide a dispersion-shifted optical fiber of substantially single mode which satisfies such condition that a bending loss is 100 dB/m or less, and capable of sufficiently enlarging an Aeff and reducing the dispersion slope. SOLUTION: This dispersion-shifted optical fiber having a double O-ring type of refractive index distribution shape has a cut-off wavelength serving as substantial single mode propagation, of which an Aeff is 45-120 μm2, a dispersion slope is 0.03-0.10 ps/km/nm2, a bending loss is 100 dB/m or less, and of which an absolute value of a wavelength dispersion value is 0.5-8 ps/km/nm, in a using wavelength band selected from 1,490-1.610 μm.

Japanese Patent No. 2001-147338: PROBLEM TO BE SOLVED: To provide technique for realizing either low cost or transmission characteristic or both, in an optical communication system which uses one or more kinds of optical fibers. SOLUTION: This optical fiber is constituted of a center core 1, a stepped core 2 which is provided on the outer circumference of the center core and which has a refractive index lower than that of the center core 1, and a cladding 7, which is provided on the outer circumference of the stepped core 2 and which has a refractive index lower than that of the stepped core 2, and that, in the band of wavelength in use selected from 1,490-1,625 nm, it has a spectrum spread of 7-15 ps/km/nm, Aeff of 60-150 μm2, a dispersion slope of 0.09 ps/km/nm2 or less, bending loss of 100 dB/m or lower, and a cut-off wavelength which essentially becomes single-mode propagation.

Japanese Patent No. 2004-226539: PROBLEM TO BE SOLVED: To provide an optical fiber having an improved bending characteristic and its manufacturing method. SOLUTION: In forming the optical fiber 10-1 having a wholly fiber structure, a preform 100 is formed in such a manner that the inner diameter of a vacancy 10h attains the inner diameter within a range from $\geq 3 to \leq 10\ \mu m$. The effect of confining the light of a core 10cr is thereby improved and the bending characteristic of the optical fiber 10-1 is improved.

Dated this 9th day of November 2005.

Respectfully submitted,



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INFORMATION DISCLOSURE CITATIONS MADE BY APPLICANT

U.S. Patent Documents

Examiner Initial*	Document Number	Issue Date	Name

Foreign Patent Documents

Examiner Initial*	Document Number	Publication Date	Country or Patent Office	Translation
_____ 1	09-274118	10/21/1997	Japan	No
_____ 2	11-218632	08/10/1999	Japan	No
_____ 3	2000-356719	12/26/2000	Japan	No
_____ 4	2001-033647	02/09/2001	Japan	No
_____ 5	2001-147338	05/29/2001	Japan	No
_____ 6	2004-226539	08/12/2004	Japan	No

Other Documents
(including author, title, pertinent pages, etc.)

Examiner Initial*

_____ 7 G.P. Agrawal, *Nonlinear Fiber Optics*, Second Edition, Section 2.3.1, Nonlinear Pulse Propagation, Academic Press 1995, pp. 37-43.

_____ 8 *Characteristics of a Single-Mode Optical Fibre Cable*, ITU-T Recommendation G.652, October 2000.

Examiner: Date Considered:

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609, draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

_____ 9 T. Hasegawa et al., *Modeling and Design Optimization of Hole-Assisted Lightguide Fiber by Full-Vector Finite Element Method*, Proceedings 27th European Conference on Optical Communication (ECOC 2001), pp. 324-325.

_____ 10 B.J. Eggleton et al., *Cladding-Mode-Resonances in Air-Silica Microstructure Optical Fibers*, Journal of Lightwave Technology, Vol. 18, No. 8, August 2000, pp. 1084-1100.

_____ 11 Bing Yao et al., *A Study of Utilization of Holey Fibers*, The Institute of Electronics, Information and Communication Engineers, Technical Report of IEICE, January 2003, pp. 47-50, with English translation.

_____ 12 Takemi Hasegawa, *Recent Advances in Photonic Crystal Fibers and Holey Fibers*, The Institute of Electronics, Information and Communication Engineers, Technical Report of IEICE, December 2001, pp. 13-18, with English translation.

_____ 13 Takemi Hasegawa et al., *Novel Hole-Assisted Lightguide Fiber Exhibiting Large Anomalous Dispersion and Low Loss Below 1 dB/km*, Optics & Photonics News, Vol. 12, Issue 6, June 2001.

_____ 14 Jian Zhou et al., *A Study on Bending Loss Characteristics of Hole Assisted Optical Fiber*, NTT Access Network Service Systems Laboratories, NTT Corporation, 2003, pp. 632, with English translation.

_____ 15 Jian Zhou et al., *Application of PCF to Optical Fiber Wiring in Residential and Business Premises*, The Institute of Electronics, Information and Communication Engineers, Technical Report of IEICE, January 2003, pp. 41-46, with English translation.

Examiner: Date Considered:

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Applicant:	Kazuhide Nakajima et al.	Confirmation No.: 5805
Serial No.:	10/523,460	Att'y Docket No.: 14321.65
Filing Date:	February 6, 2005	Art Unit: 2872
For:	SINGLE MODE OPTICAL FIBER WITH ELECTRON VACANCIES	

References Cited by Applicants

While the filing of Information Disclosure Statements is voluntary, the procedure is governed by the guidelines of Section 609 of the Manual of Patent Examining Procedure and 37 C.F.R. §§ 1.97 and 1.98. To be considered a proper Information Disclosure Statement, Form PTO-1449 shall be accompanied by a copy of each listed patent or publication or other item of information and a translation of the pertinent portions of foreign documents (if an existing translation is readily available to the applicant), an explanation of relevance of each reference not in the English language, and should be submitted in a timely manner as set out in MPEP Sec. 609.

Examiners will consider all citations submitted in conformance with 37 C.F.R. § 1.98 and MPEP Sec. 609 and place their initials adjacent the citations in the spaces provided on this form. Examiners will also initial citations not in conformance with the guidelines which may have been considered. A reference may be considered by the Examiner for any reason whether or not the citation is in full conformance with the guidelines. A line will be drawn through a citation if it is not in conformance with the guidelines AND has not been considered. A copy of the submitted form, as reviewed by the Examiner, will be returned to the applicant with the next communication. The original of the form will be entered into the application file.

Each citation initialed by the Examiner will be printed on the issued patent in the same manner as references cited by the Examiner on Form PTO-892.

The reference designations "A1," "A2," etc. (referring to Applicant's reference 1, Applicant's reference 2, etc.) will be used by the Examiner in the same manner as Examiner's reference designations "A," "B," "C," etc. on Office Action Form PTO-1142.

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Examiner: Date Considered:

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609, draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.